ABSTRACT

Charles University

Faculty of Pharmacy in Hradec Králové

Department of Biochemical Sciences

Candidate: Erika Verešová

Supervisor: PharmDr. Hana Bártíková, Ph.D.

Title of thesis: The impact of selected sesquiterpenes on the activity of antioxidant enzymes in the differentiated Caco-2 cell line

The cases of cancer diagnosis rapidly continue to grow across the population. It is a modern trend to buy more and more often a variety of herbal food supplements in order to strengthen or restore human health. Many scientists have been researching *Myrica rubra* plant for its potential therapeutic effects. In our research we used sesquiterpenes isolated from this plant, in order to determine their effects on the activity levels of antioxidant enzymes in a differentiated Caco-2 cell line derived from intestinal epithelium tumor that have maintained characteristics of healthy cells. Caco-2 cells are being used as a basis for testing of substances and their effects on non-cancerous cells.

The cells were incubated for 24 and 48 hours with a concentration 25 µg/ml of tested substances. Essential oil from *Myrica rubra* and selected individual sesquiterpenes (α-humulene, β-caryophyllene and *trans*-nerolidol) were chosen to be tested. Of the antioxidant enzymes, we determined the enzymes glutathione-S-transferase, glutathione reductase, glutathione peroxidase, catalase and superoxide dismutase.

The results of our experiments have confirmed the safety of these substances without the reduction of antioxidant protection of the cells. Enzyme levels remained within normal levels.